



COMMUNICATIONS REGULATORY
AUTHORITY OF THE REPUBLIC OF LITHUANIA

3,6 GHz band in Lithuania

2021 09 21



Situation of C band in Lithuania today

- Good agreements with Latvia, Belarus and Poland.
- No agreement with Russian Federation. Their position is to protect their **FS** and **FSS services** - it blocks the use of mobile 5G in a major part of LTU.
- Option of **fixed 5G networks** and small-area wireless access points deployment instead of mobile 5G networks is under consideration with operators.
- One operator in Lithuania has valid licences:
 - **3466-3494 MHz** and **3566-3594 MHz** valid until 2022-10-22;
 - **3605-3670 MHz** valid until 2027-07-10.

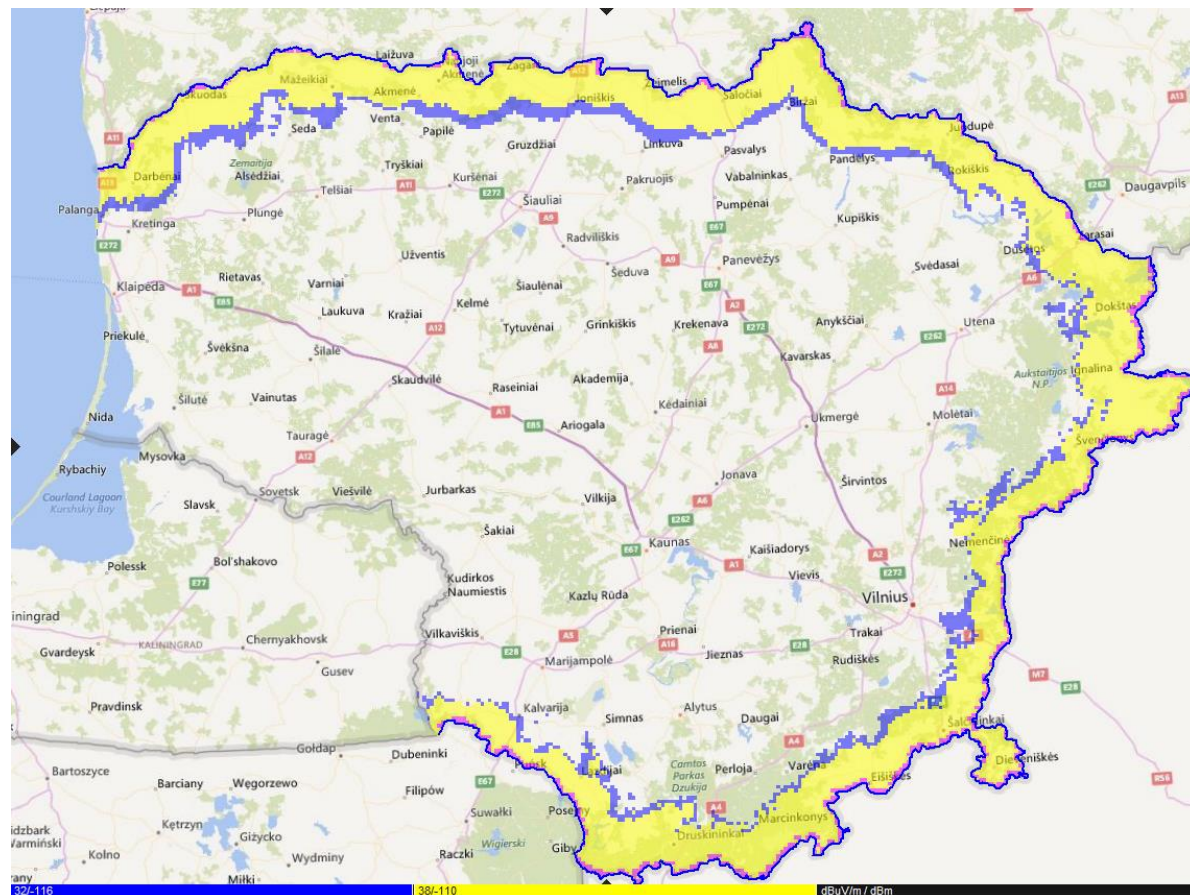
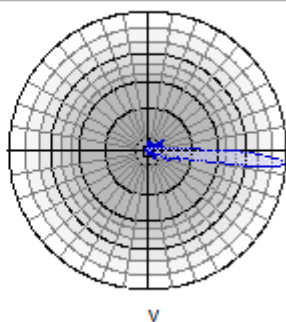
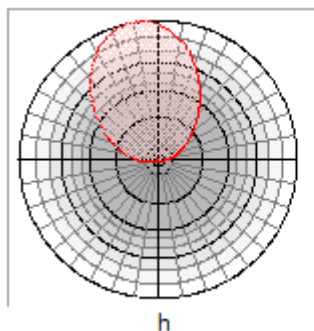


3400-3800 MHz band agreements with Latvia, Belarus, Poland

P.1546, 10%
Tx height 40 m
Rx height 3 m
EIRP 60 dBm / 5 MHz

Horizontal pattern

-90 Vertical pattern +90



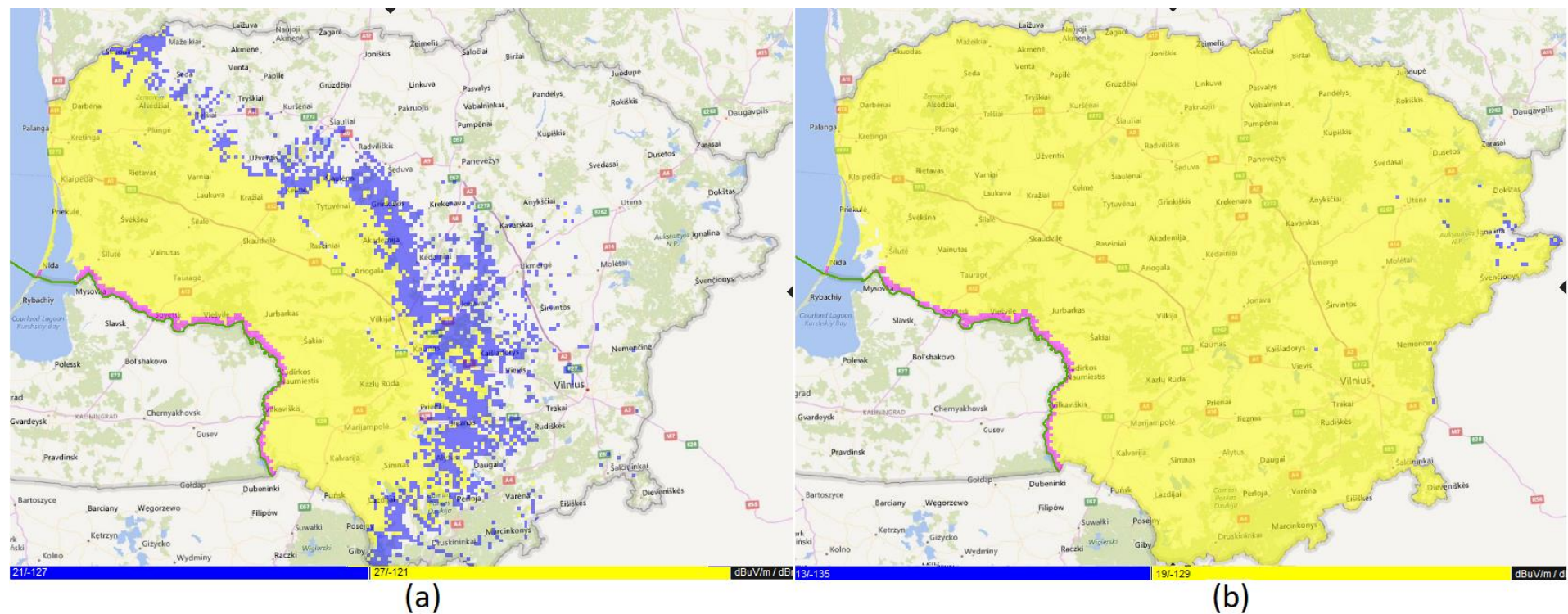
Negotiations with Russian Federation

In 2019, RUS proposed conditions of the 3400-3800 MHz band use:

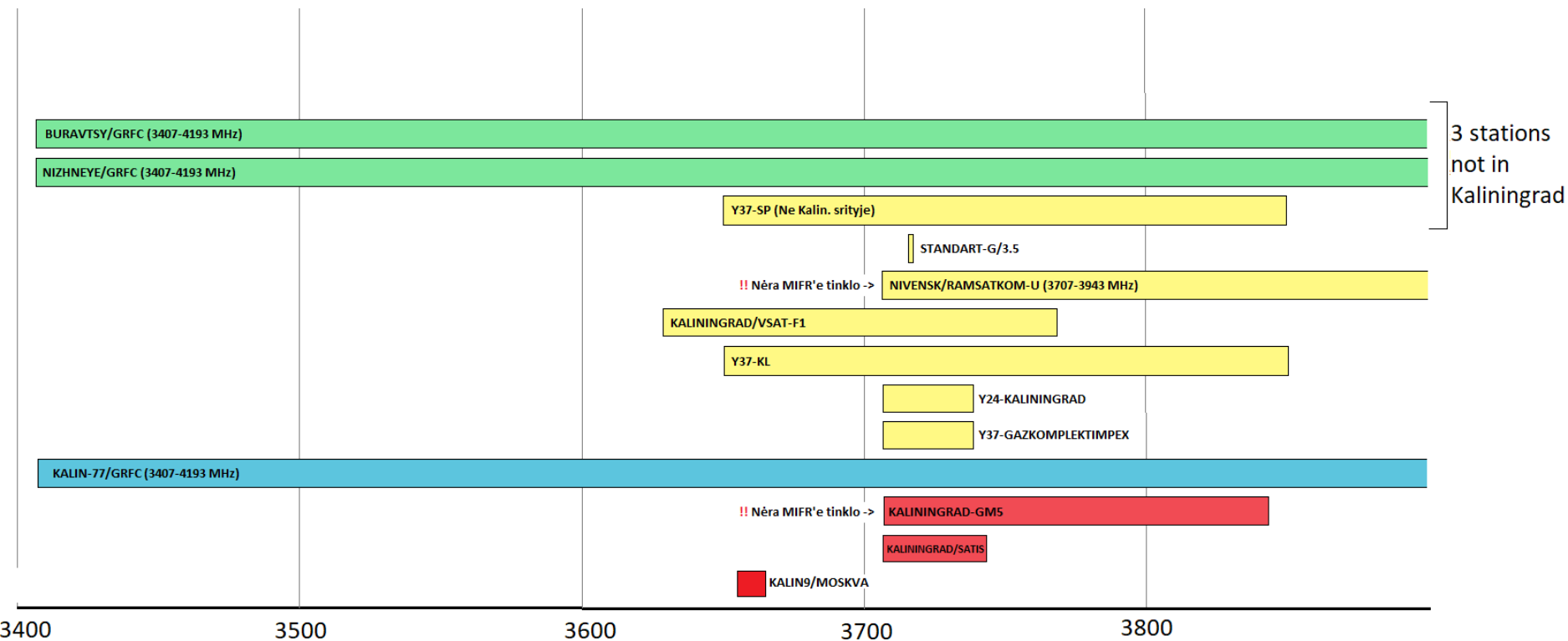
a) in **3400-3600 MHz** frequency band: -132 dBW/MHz/m^2 at 20 m using ITU-R P.452 model during 1% of the time in the area 60 km from the border and during 10% of the time elsewhere;

b) in **3600-3800 MHz**: $-139.8 \text{ dBW/MHz/m}^2$ at 20 m using ITU-R P.452 model, during 1% of the time.

LTU did not accept that. Fixed 5G networks and small-area wireless access points instead of mobile are under consideration with operators.



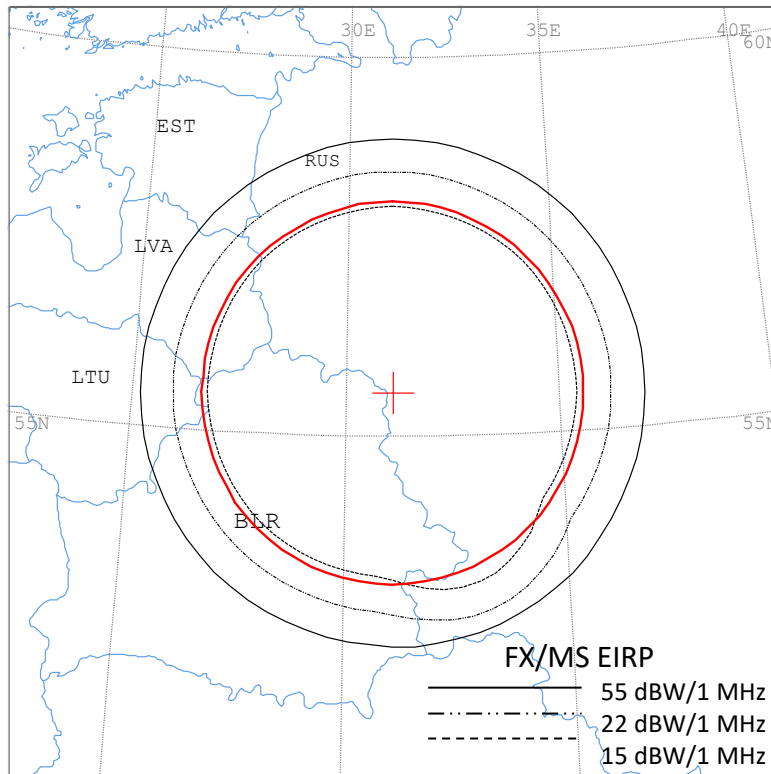
Earth stations of Russian Federation



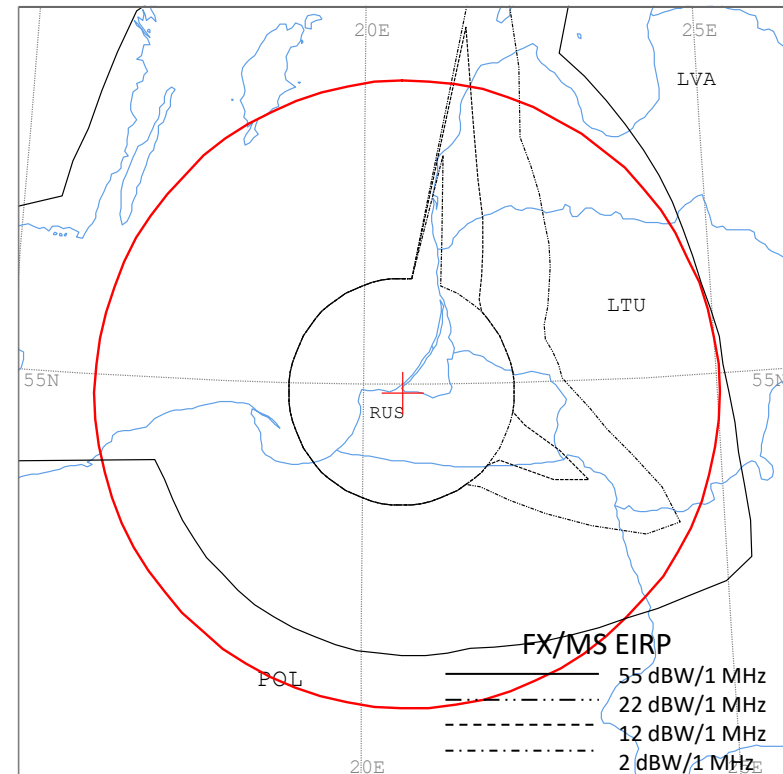
	Coordinated with LTU?	In MIFR?
	+	+
	+	-
	-	+
	-	-

Coordination zones of RUS Earth stations

FREQUENCY BAND: 3400 – 3800 MHz



FREQUENCY BAND: 3629-3800 MHz



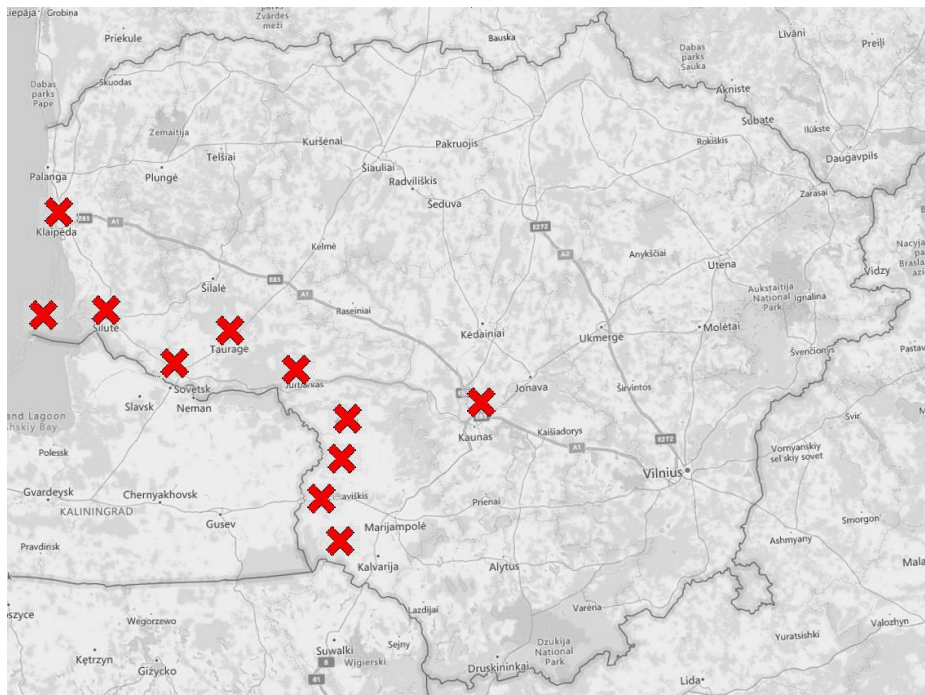
T=0.0016%



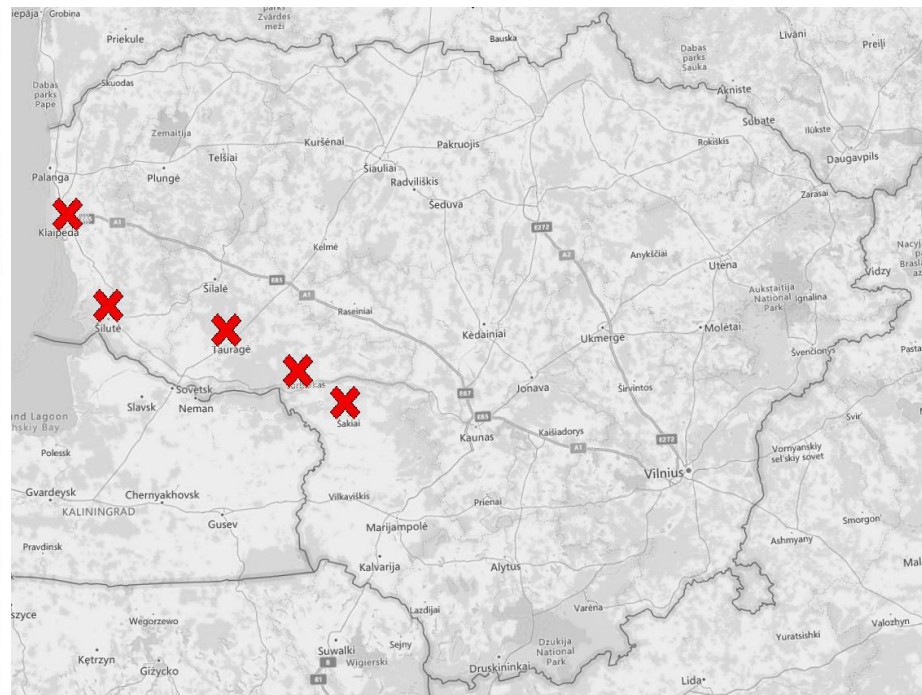
FB/FX stations coordination (1)

2018 03 16: Lithuania sent the proposal for 32 FB/FX stations coordination. It was rejected by Russian administration.

3400-3600 MHz: 22 FB stations



3600-3800 MHz: 10 FX stations

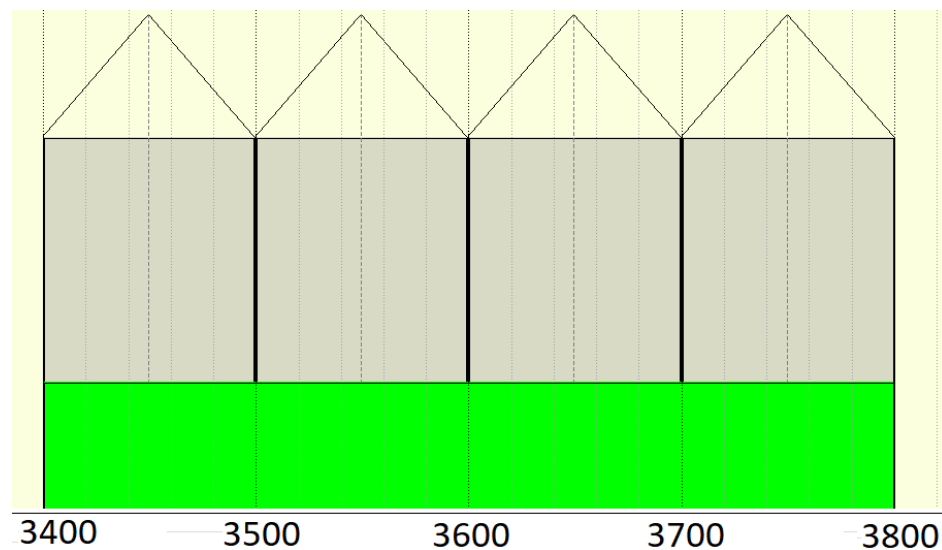
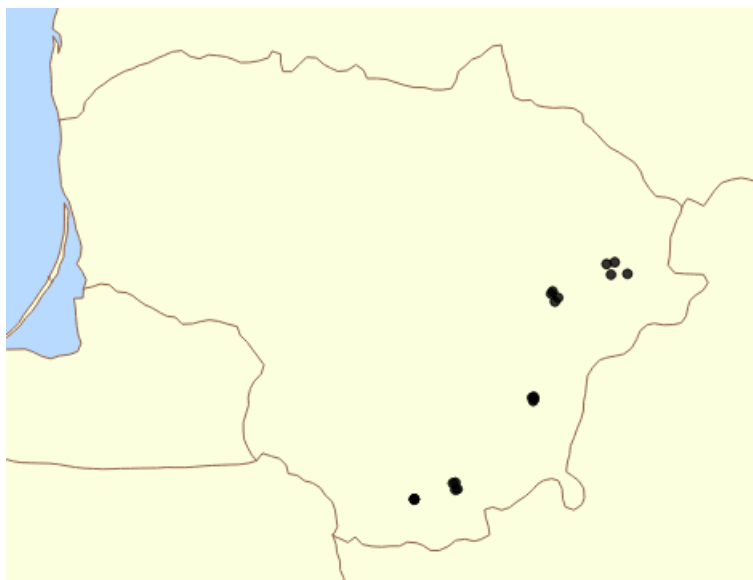


A map of Lithuania with the four largest cities marked by red 'X's. The cities are Kaunas, Vilnius, Klaipėda, and Šiauliai. The map shows major roads, rivers, and surrounding geographical features. Other cities labeled include Palanga, Plungė, Tauragė, Utena, and many others. The map is oriented with North at the top.

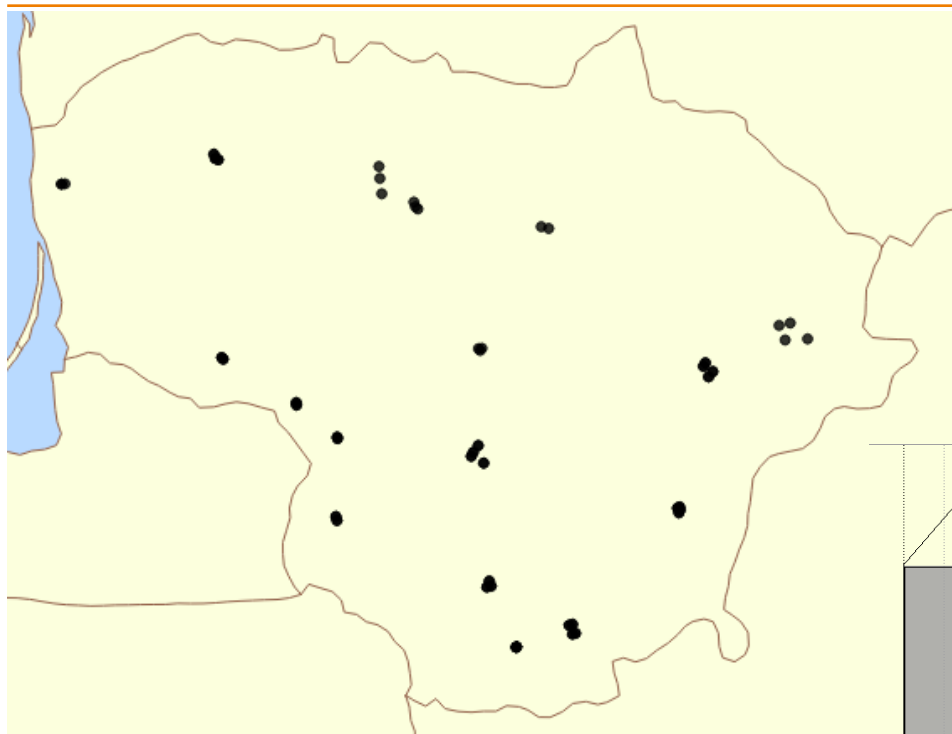
FB/FX stations coordination (3)

2020 11 04: Lithuania sent the proposal for 20 FX stations coordination. Stations were coordinated.

Spectrum occupancy

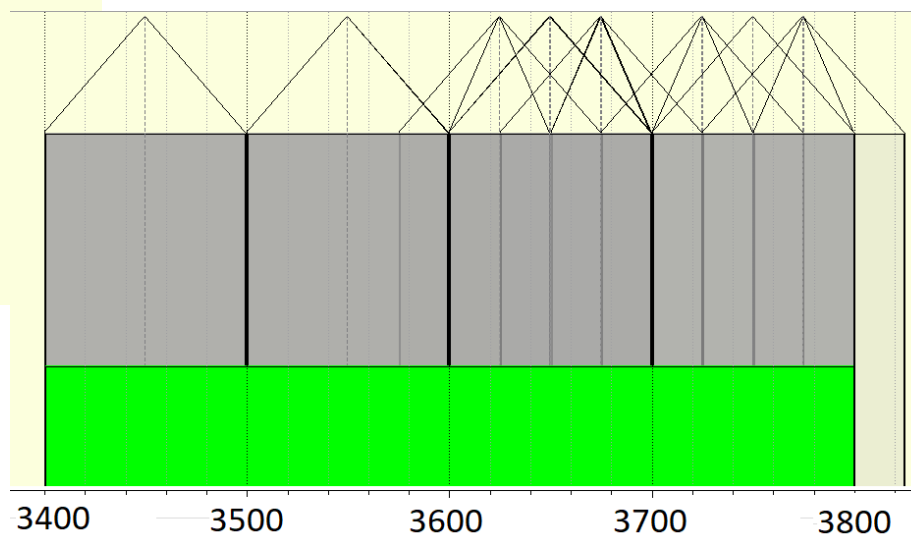


Notified LTU FB/FX stations since 2019



There are 86 FB/FX stations notified since 2019.

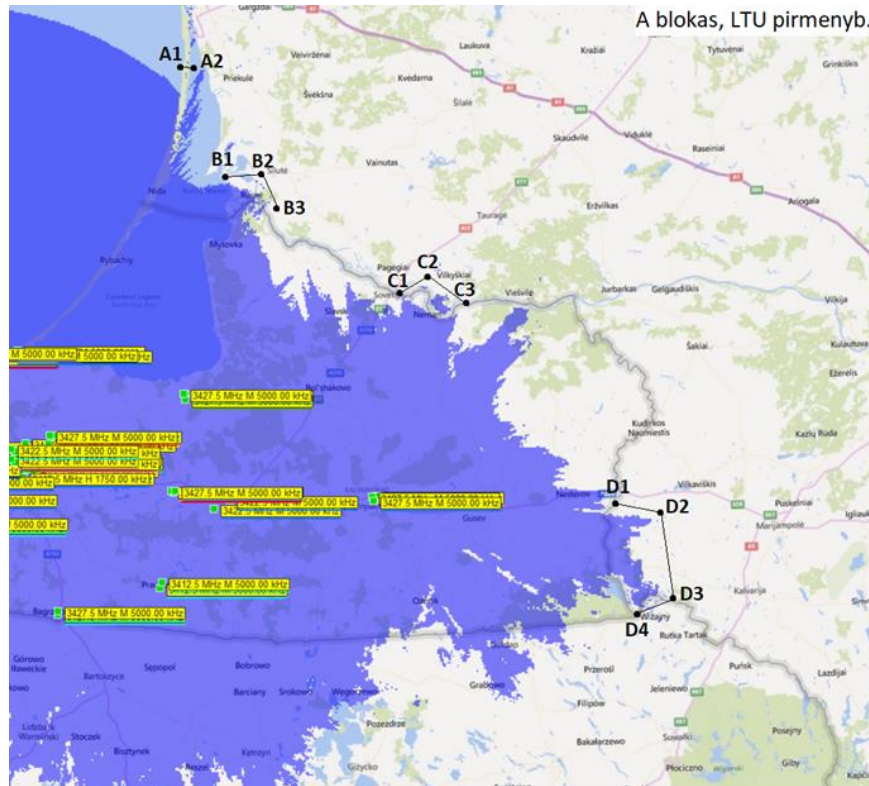
Spectrum occupancy



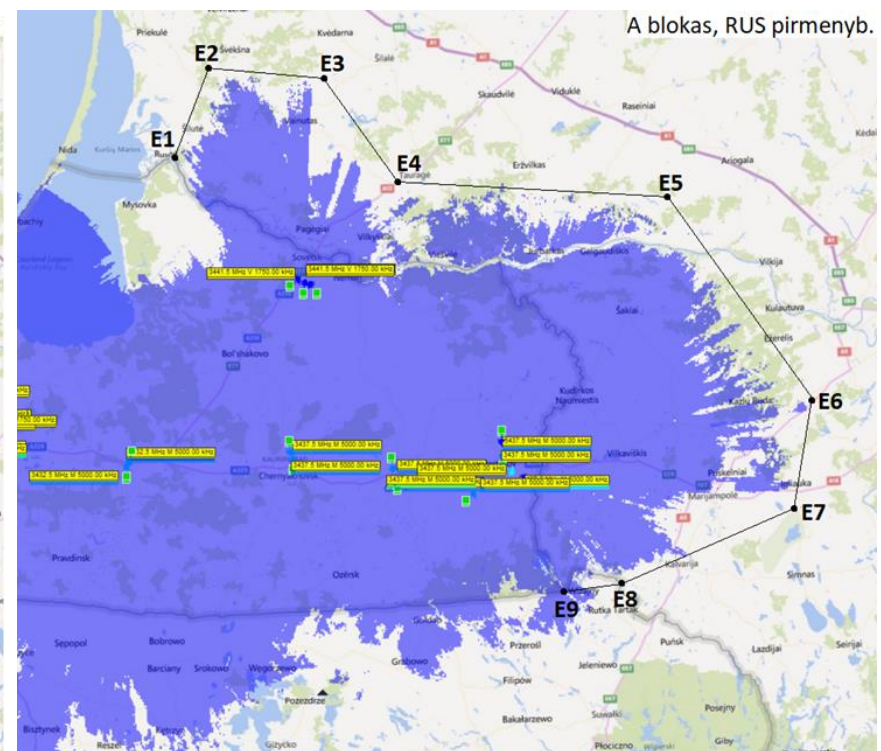
Protection of RUS FX P-MP vs LTU 5G (by the agreement, signed in 2002 and valid until 2021)

Protection criteria: -122 dBW/MHz/m^2

3410,875–3430,125 MHz (LTU pref.):



3430,125–3449,375 MHz (RUS pref.):



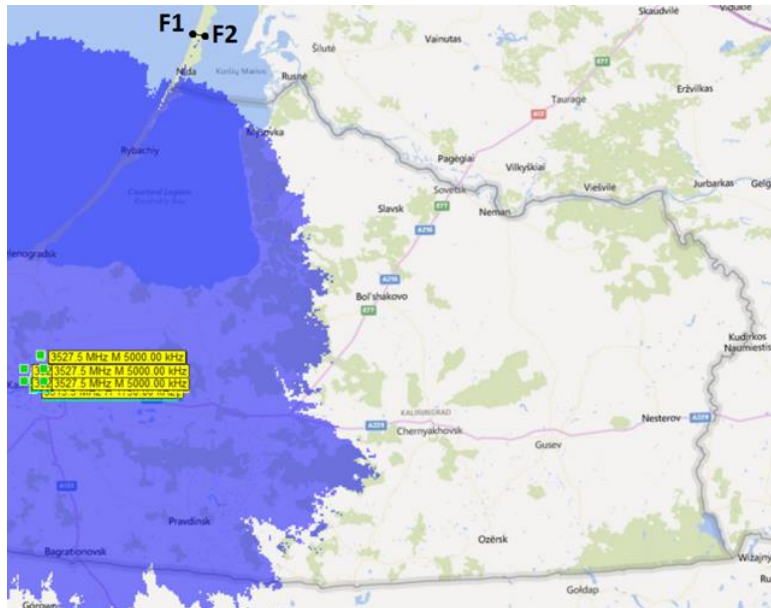
Blue zone – zone, needed to protect RUS FX P-MP stations from harmful interference, caused by LTU 5G stations (P.452, 20%, without clutt. EIRP=54dBm/5MHz, h=40m, tilt=-6deg.)



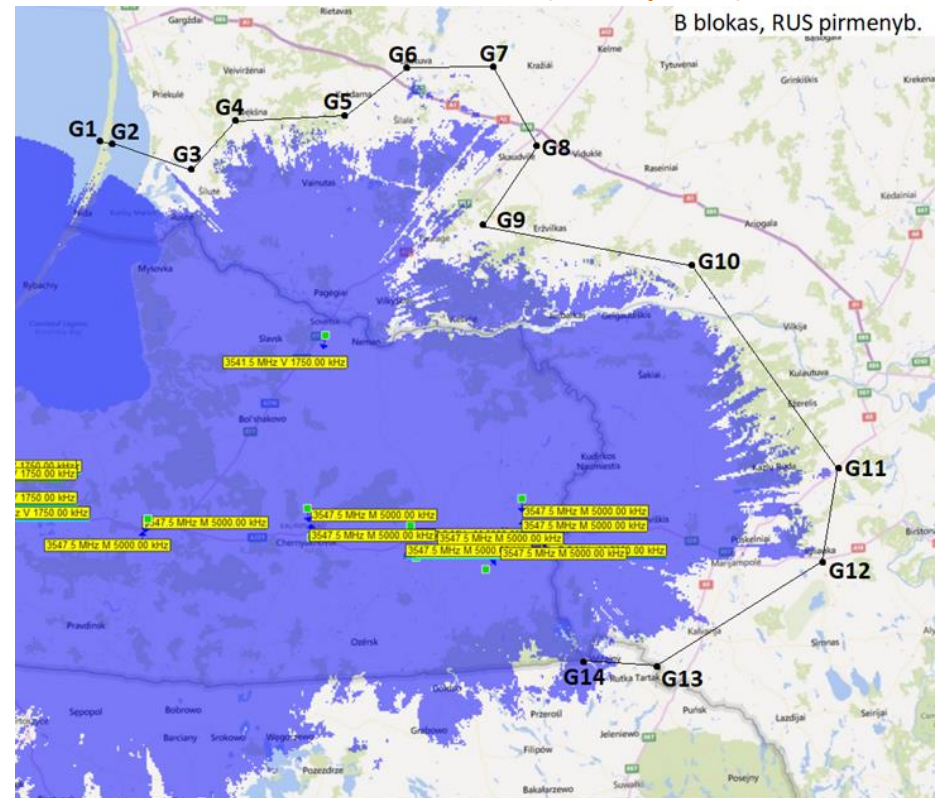
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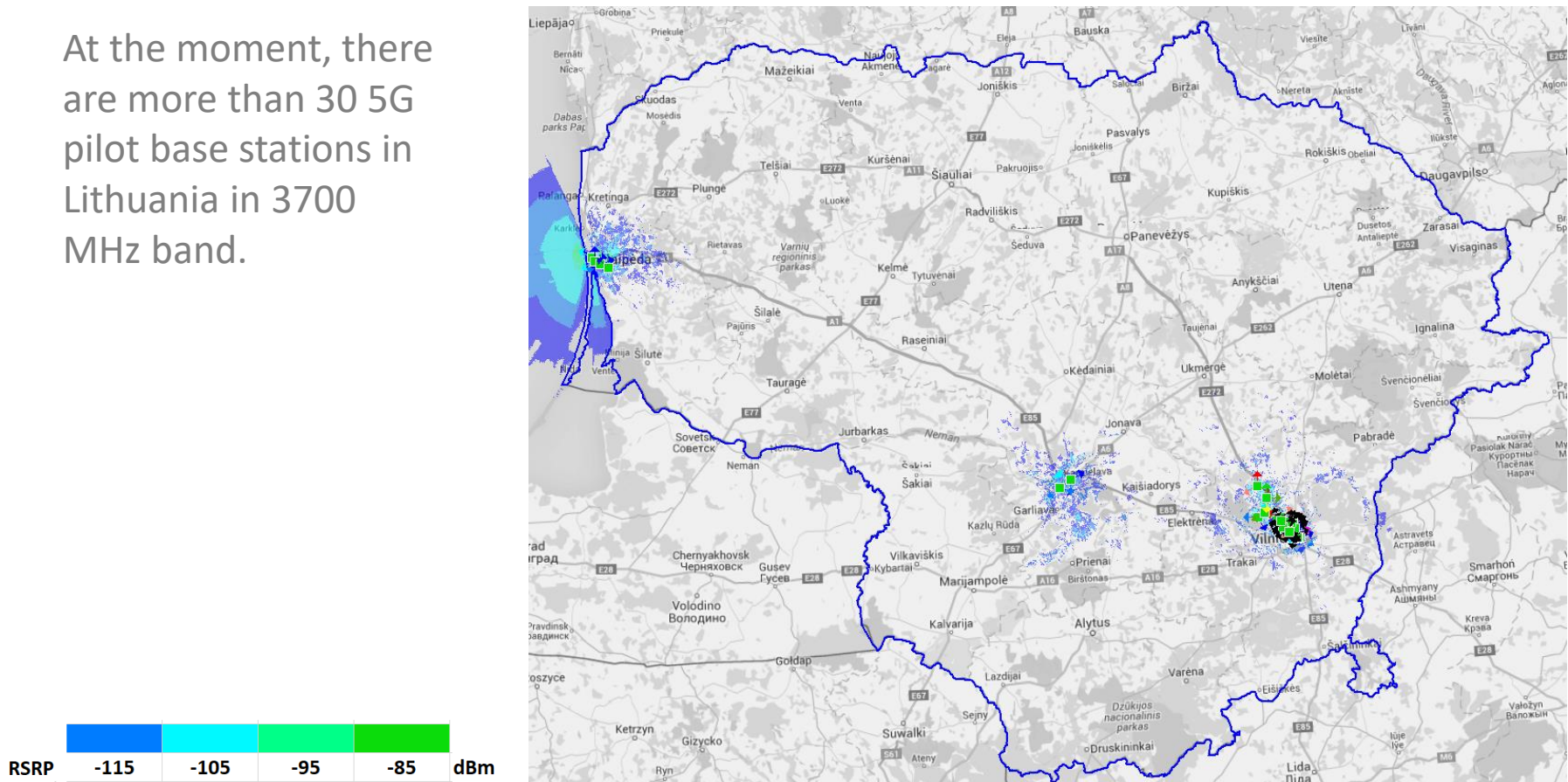


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3.6 GHz band trials

At the moment, there are more than 30 5G pilot base stations in Lithuania in 3700 MHz band.



Unsynchronized 5G coordination: ECC Rec (15)01 versions

➤ **Amendment on 5 February 2016:**

The 3400-3600 and 3600-3800 MHz bands may be used for unsynchronised MFCN TDD systems without coordination if the mean field strength of each cell produced by the base station does not exceed a value of **32 dBμV/m/5 MHz** at a height of 3 m above ground level at the borderline between countries.

➤ **Amendment on 14 February 2020 (adapted to 5G AAS systems):**

AAS and non-AAS base stations of unsynchronised TDD systems on both sides of the borderline in the frequency band 3400-3800 MHz for all PCIs may be used without coordination with a neighbouring country if the mean field strength of each cell produced by the base station does not exceed a value of **0 dBμV/m/5 MHz** at a height of 3 m above ground level at the borderline between countries. **0 dBμV/m/5 MHz** is problematic for small countries.

➤ 2021 – ? New amendment to come: ongoing work in CEPT/ECC PT1 group.



Remaining questions

- NR / 5G + LTE networks **synchronization** by ECC/REC/(20)03;
- Development obligations for MNOs;
- LTU sent a **complaint** to Radio Regulations Board about incorrect Radiocommunication Bureau's RR interpretation;
- Actions in CEPT CPG PTB and CPG plenary: LTU asked for discussion on invocation of **Article 48 (CS)** with regards to the coordination of terrestrial stations together with common understanding of this article in relation to the RR. 2022 Plenipotentiary Conference (PP-22) and ITU-COM are invited to consider this question.





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